Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

1. (Currently Amended) A system to determine a most likely position of [[an]] <u>a moving inanimate</u> object, said system comprising:

a plurality of sensors each providing a location of the <u>moving inanimate</u> object with an associated sensor uncertainty distribution; and

a data processor configured to read location data from two or more sensors, wherein said data processor combines the location data and the associated sensor uncertainty distributions from said two or more sensors and generates a value indicative of the most likely position of the <u>moving inanimate</u> object.

2. (Original) The system of claim 1, wherein for each sensor, the associated sensor uncertainty distribution is dependent on one or more performance characteristics for the sensor.

3. (Original) The system of claim 2 further comprising a set of fuzzy logic rules applied to the one or more performance characteristics of the sensors.

4. (Previously Presented) The system of claim 2 further comprising a set of fuzzy logic rules applied to one or more parameters that affect the one or more performance characteristics and/or the sensor uncertainty distribution.

5. (Original) The system of claim 2 further comprising a neural network applied to the one or more performance characteristics of the sensors.

6. (Previously Presented) The system of claim 2 further comprising a neural network applied to one or more parameters that affect the one or more performance characteristics and/or the sensor uncertainty distribution.

7. (Original) The system of claim 1 further comprising a neural network trained for determining a sensor reliability measure.

8. (Original) The system of claim 1 further comprising a neural network trained for determining a realization measure indicative of the mean of the sensor reliability measure.

9. (Previously Presented) The system of claim 1 wherein the data processor is configured to determine a probability distribution for a position of the object based on the location data and the associated sensor uncertainty distribution from each of the at least two sensors.

10. (Original) The system of claim 9 wherein each probability distribution for the position of the object includes a value indicating a likely position of the object.

11. (Original) The system of claim 9 wherein each probability distribution for the position of the object is segmented into a plurality of sub-ranges.

12. (Original) The system of claim 11 wherein each sub-range has an associated probability value indicative of the likely position of the object within the sub-range.

13. (Original) The system of claim 11 wherein parameters affecting sensor uncertainties are manipulated by a conditional probability rule to determine a posteriori conditional probability distribution for each sub-range.

14. (Original) The system of claim 9 wherein all the probability distributions for the position of the object have common sub-ranges.

15. (Original) The system of claim 1 wherein a conjunctive fusion method is applied to a plurality of parameters affecting sensor reliability, said method providing an estimation of intersection points of probability measures by identifying the sub-range with the most likely probability of defining the object's position.

16. (Original) The system of claim 1 wherein

each sensor indicates a likely position of the object;

each sensor yields an associated probability distribution for the position of the object; and

each probability distribution for the position of the object is segmented into a plurality of sub-ranges, said sub-ranges being applied to each probability distribution for the position of the object.

17. (Original) The system of claim 16 wherein for each sub-range, the probability values associated with each sensor are manipulated using statistical means to generate a value indicative of the most likely position of the object and an associated probability distribution for the most likely position of the object.

18. (Previously Presented) The system of claim 1 adapted for optimizing the separation distance between objects.

19. (Previously Presented) The system of claim 1 adapted for tracking the relative location of a plurality of objects.

20. (Previously Presented) The system of claim 1 wherein the plurality of sensors includes a plurality of radar systems.

21. (Previously Presented) The system of claim 1 wherein the plurality of sensors includes a plurality of beacon systems.

22. (Currently Amended) A system to determine a global position of one or more moving inanimate objects, said system comprising:

a plurality of local systems with each local system providing a value indicative of the most likely position of the moving inanimate object;

wherein each of the local systems includes

a plurality of sensors each providing a location of the moving inanimate object with an associated sensor uncertainty distribution; and

a data processor for combining the location data from selected sensors and the associated sensor uncertainty distributions to generate a value indicative of the most likely position of the moving inanimate object;

wherein each of the local systems transmits the values indicative of the most likely position of the moving inanimate object to a central processing center that determines the global position of the one or more moving inanimate objects.

23. (Previously Presented) The system of claim 22 wherein each local system transmits a probability distribution for the most likely position of the object to the central processing center.

24. (Currently Amended) A method for determining a most likely position of [[an]] a moving inanimate object, said method comprising:

receiving location data and an uncertainty distribution for the moving inanimate object from each of a plurality of sensors;

combining the location data and the uncertainty distributions from the plurality of sensors;

generating a value indicative of the most likely position of the moving inanimate object based on the combined location data and uncertainty distributions; and

generating a probability distribution for the most likely position of the moving inanimate object based on the combined location data and uncertainty distributions.

25. (Previously Presented) The method of claim 24 wherein each of the plurality of sensors indicates a likely position of the object and yields an associated probability distribution for the position of the object, the method further comprising:

segmenting each probability distribution for the position of the object into a plurality of sub-ranges, said sub-ranges being identically applied to each probability distribution for the position of the object, wherein each sub-range has a probability value and an associated probability distribution for the position of the object.

26. (Previously Presented) The method of claim 25, said method further comprising:

using statistical means to manipulate the associated probability values for each sub-range; and

generating a value indicative of the most likely position of the object.

27. (Previously Presented) The method of claim 25, said method further comprising:

using statistical means to manipulate the associated probability values for each sub-range; and

generating a probability distribution for the most likely position of the object.

28. (Previously Presented) A method to determine a most likely global position of an object, said method comprising the steps of:

receiving from a plurality of local systems, data on the most likely position of the object;

combining the data from the plurality of local systems; and

generating a value indicative of the most likely global position of the object based on the data from the plurality of local systems;

wherein at least selected local systems include two or more sensors wherein each sensor provides location data and a probability distribution for the object, wherein the at least selected local systems combine the location data and the probability distribution from at least two of the two or more sensors and provide combined local location data and a combined local probability distribution for the object, the combining step combining the combined local location data and the combined local probability distributions from at least selected local systems and generating a value indicative of the most likely global position of the object.

29. (Canceled)

30. (Previously Presented) The method of claim 28 wherein at least two of the local systems are physically spaced from one another.

31. (Canceled)

32. (Previously Presented) A method for determining a most likely global position of an object, said method comprising:

providing two or more local systems, wherein each local system includes at least one sensor that provides location data and a probability distribution for the object;

combining the location data and the probability distribution from at least selected local systems; and

generating a value indicative of the most likely global position of the object based on the combined location data and probability distribution from the selected local systems.

33. (Currently Amended) A system to determine a most likely position of an aircraft in an airspace ~~object~~, said system comprising:

a plurality of sensors each providing a location of the aircraft ~~object~~ with an associated sensor uncertainty distribution, wherein for each sensor, the associated sensor

uncertainty distribution is dependent on one or more performance characteristics for that sensor; and

a data processor configured to read location data from two or more sensors, wherein said data processor combines the location data and the associated sensor uncertainty distributions from said two or more sensors and generates a value indicative of the most likely position of the aircraft ~~object~~.